

OPTICAL BEAM-STEERING SWITCHING SYSTEM HAVING BEAM COUPLING CONTROL

Abstract

Apparatus controls optical coupling attenuation of an input optical beam to one of a plurality of output optical facilities. The apparatus includes a plurality of lenses, each lens aligned to couple a received optical beam to one of the plurality of output optical facilities and to couple the beam to a corresponding co-axially aligned output facility. Contiguous pairs of the plurality of lenses are arranged to have a predetermined space between such contiguous pairs, so that when the direction of a received beam is misaligned to a destination lens of a contiguous pair, only a first portion of the received beam gets coupled to the corresponding output facility of that destination lens and a second portion of the received beam propagates into the predetermined space so as not to be coupled to any of the plurality of output facilities. This results in an optimally sized optical switch that provides the necessary attenuation functionality while keeping the crosstalk level to other output facilities below the required crosstalk threshold. In another embodiment, the optical coupling control apparatus is implemented as part of an optical beam-steering switching apparatus that also includes an optical beam-steerer for receiving an input optical beam and for changing the direction of the received beam relative to one of the plurality of lenses so as to change the first portion of the received beam propagated to the corresponding output facility.